

## One more new species of *Chaerilus* Simon, 1877 (Scorpiones, Chaerilidae) from the Island of Halmahera, Indonesia

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**Abstract** — A new species belonging to the genus *Chaerilus* Simon, 1877, *Chaerilus spinatus* sp. n. is described from the Island of Halmahera, Indonesia. *Chaerilus celebensis* Pocock, 1894, originally described from Luwu, Celebes (Sulawesi) Island, is confirmed as a distinct species and as a possible endemic element to the Celebes. Two species of *Chaerilus* are at present known to Halmahera, the second one being *Chaerilus telnovi* Lourenço, 2009.

**Key words** — Scorpion, Chaerilidae, *Chaerilus*, new species, Halmahera, Indonesia

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### Introduction

In recent publications several historical aspects, but also other insights concerning the taxonomy of the genus *Chaerilus* Simon, 1877 were the subject of discussion; for details refer to Lourenço & Zhu (2008). Presently, other studies concerning obscure or poorly characterized species of this genus are in preparation by the senior author. One of these, *Chaerilus celebensis* Pocock, 1894, originally described from Luwu, Celebes (Sulawesi) Island, was the subject of several misidentifications; see for example the description of *Chaerilus petrzelkai* Kovařík, 2000 from the South of Vietnam (Kovařík, 2000, Lourenço & Zhu, 2008). This was the consequence of superficial studies (see Fage, 1946), but most often of insufficient available fresh material.

Recent biological studies conducted on individuals collected in a population from the north of Island of Luzon, Philippine Islands (Lourenço & Ythier, 2008; Lourenço et al., 2008) led to the description of a new species close to *C. celebensis*. This study equally suggested that *C. celebensis* most certainly represents an endemic element to the Celebes (Sulawesi) Island. The species was consequently redescribed and properly illustrated (Lourenço & Ythier, 2008; Lourenço et al., 2010). In the present note a new species of *Chaerilus* is described from the Island of Halmahera, Indonesia. This is the second species of *Chaerilus* described from Halmahera. The first one being *Chaerilus telnovi* Lourenço, 2009, an eyeless forest litter scorpion, the first one ever reported from Asia (Lourenço, 2009).

### Material and methods

Illustrations and measurements were produced using a Wild M5 stereo-microscope with a drawing tube (camera lucida) and an ocular micrometer. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Hjelle (1990). The specimens of *Chaerilus celebensis* Pocock, 1894, used for a comparative study, are listed in Lourenço & Ythier (2008).

### Taxonomic treatment

Chaerilidae Pocock, 1893

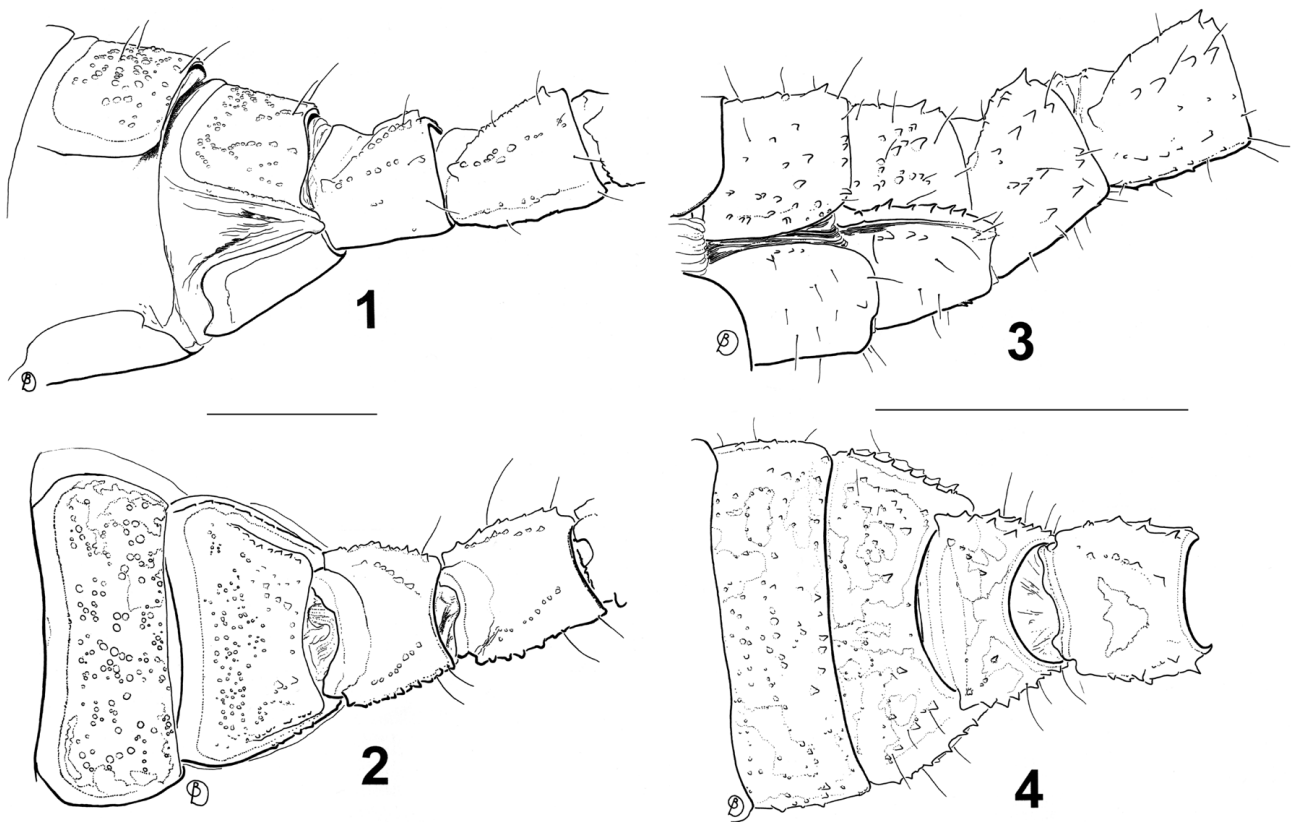
*Chaerilus* Simon, 1877

***Chaerilus spinatus* sp. n. (Figs. 1–17)**

**Material:** Indonesia, Moluccas, Island of Halmahera, nearby Sagea Village, Batu Lubang (0°29'40"N, 128°06'26"E), 10 m alt. (L. Deharveng & A. Bedos leg.), 24/VII/1988 (Malu 24), female holotype, 1 female, 1 juvenile paratypes; 20/VII/1988 (Malu 13), male paratype. Holotype and one paratype deposited in Museum Zoologicum Bogoriense, Cibinong, Indonesia; two paratypes deposited in the Muséum national d'Histoire naturelle, Paris.

**Ecological notes:** Sagea is a cave (also a village) near Weda in Weda district on Southern peninsula of Halmahera. Sagea is located several kilometers from Gunung Talaga, where *Chaerilus telnovi* (the other known species in the Island) has been collected. Sagea is one of the largest caves on North Moluccas. It is a typical karst cave. The new species, however, has no characteristics of a troglobitic species.

**Diagnosis.** Species of small size compared to the other



**Fig. 1-4.** Tergites VI-VII and metasomal segments I-II, lateral and dorsal aspects, showing carinae and granulations. 1-2. *Chaerilus celebensis*, female from Malino, Luwu, Celebes (Sulawesi) Island. 3-4. *Chaerilus spinatus* sp. n., female holotype (scales=2 mm).

species of the genus, total length of adults 17 to 19 mm. General coloration yellowish to pale yellow, intensely marked with dark brown variegated pigmentation. Carapace with the anterior margin weakly emarginated, almost straight; carinae and granulations weakly marked; furrows shallow. Carinae on tergites strongly marked and with spinoid granules; dorsal and dorso-lateral carinae of metasomal segments with strongly marked spinoid granules; ventral carinae present on all segments, and with spinoid granules on IV and V; internal carinae of pedipalp femur with strongly marked spinoid granules. Dentate margins of fixed and movable fingers of pedipalp chela with 6-7 rows of granules, not well delimited. Pectinal tooth count 4-4 on male and 3-3 on females. Trichobothriotaxy of Type B, orthobothriotaxic.

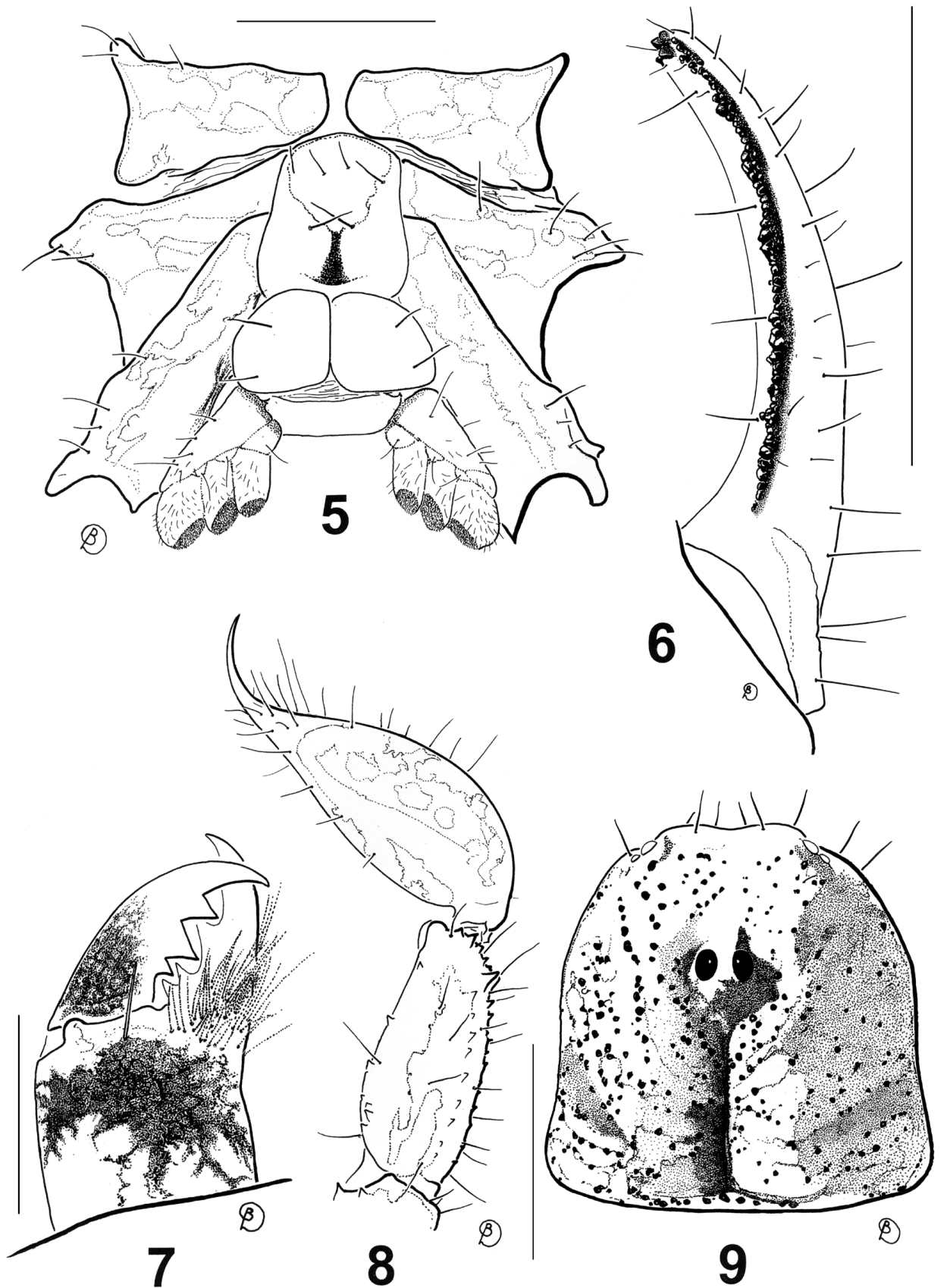
**Relationships.** By its general morphology and the pattern of pigmentation, *Chaerilus spinatus* sp. n., can be associated with *Chaerilus celebensis* Pocock, 1894, described from Celebes (Sulawesi) Island. The new species can, however, be easily distinguished by the following features: (i) a much smaller total size and distinct morphometric values (see Table I), (ii) carinae of tergites, metasomal segments and pedipalp femur, with unusual strongly marked spinoid granules.

**Etymology:** the specific name makes reference to the intensely spinoid granulations and carinae.

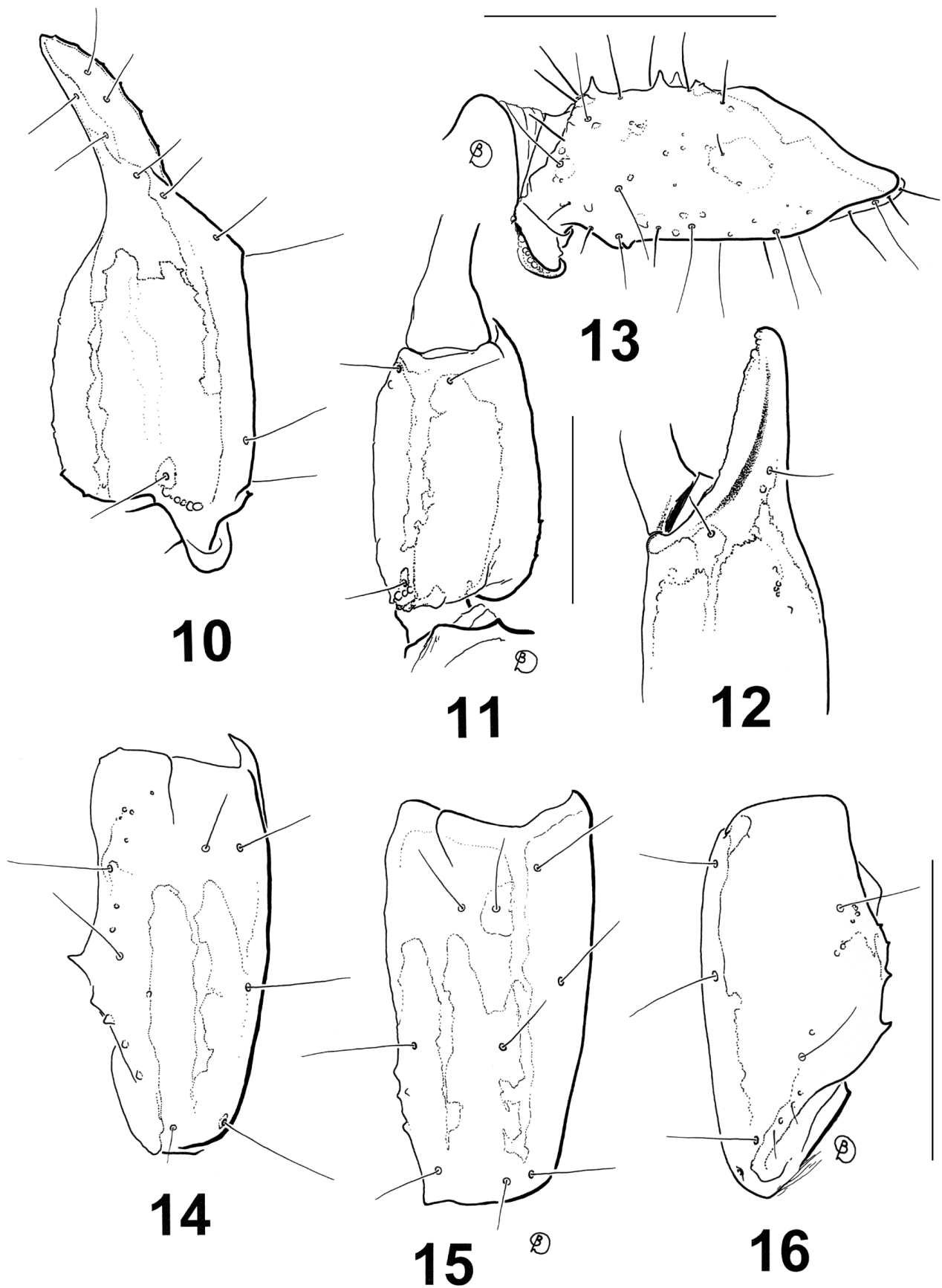
#### Description based on female holotype and paratypes.

**Coloration:** Basically yellowish to pale yellow, with a dark brown variegated pigmentation on body and appendages. Carapace yellowish, strongly marked with brownish pigmentation, in particular on the anterior two thirds. Tergites with the same colour and pigmentation of the carapace. Metasomal segments yellowish with dark variegated pigmentation; carinae darker than the tegument. Telson yellowish to pale yellow with diffused brownish spots; aculeus reddish. Chelicerae yellowish, intensely marked with variegated spots; base of the fingers dark; teeth reddish. Pedipalps yellowish to reddish-yellow with dark variegated pigmentation; femur dark brown; chela fingers much darker than chela hand. Legs yellowish intensely marked with brownish spots. Venter and sternites yellowish; with the exception of the pectines all other structures are marked with diffused brownish spots.

**Morphology:** Carapace with the anterior margin weakly emarginated, almost straight; carinae and granulations weakly marked in female, smooth on male; furrows shallow. Two pairs of lateral eyes; median eyes moderate, about 1.5 the size of lateral eyes; median eyes anterior to the centre of the carapace. Tergites with strongly spinoid granules, better marked in female; carinae moderately marked. Sternum



**Fig. 5–9.** *Chaerilus spinatus* sp. n., female holotype. 5. Ventral aspect showing coxapophysis, sternum, genital operculum and pectines. 6. Disposition of granulations on the dentate margins of the pedipalp chela movable finger. 7. Chelicera, dorsal aspect. 8. Metasomal segment V and telson, lateral aspect. 9. Carapace, dorsal aspect (scales = 2 mm; figure 7 = 1 mm).



**Fig. 10–16.** *Chaerilus spinatus* sp. n., female holotype. Trichobothrial pattern. 10–12. Chela, dorso-external, ventral and internal aspects. 13. Femur, dorsal aspect. 14–16. Patella, dorsal, external and ventral aspects (scales = 2 mm).





**Fig. 17.** Map of Halmahera Island, Indonesia, showing the type locality of *Chaerilus spinatus* sp. n. (Sagea), and that of *Chaerilus telnovi* (Gunung Talaga).

pentagonal, longer than wide; genital operculum plates with a sub-oval shape. Pectinal tooth count 3–3 in female holotype (4–4 in male paratype). Sternites almost smooth with spinoid granules on VI and VII; spiracles small and round; carinae absent from VII. Metasomal segments I to III wider than long; IV and V longer than wide. All the carinae strongly granular with spinoid granules; ventral carinae present on all segments; segment V with five carinae, all composed of spinoid granules. Vesicle smooth, with a short aculeus. Pedipalps: Femur with five carinae; dorsal and ventral internal with strongly marked spinoid granules; dorsal and ventral external weakly marked. Patella with six carinae; dorsal and ventral internal with one strong spinoid granule. Chela with eight carinae, all weakly to moderately developed. Tegument with few granulations. Finger shorter than manus, with 6–7 rows of granules on the dentate margins, not well delimited. Chelicerae characteristic of the family Chaerilidae (Vachon, 1963). Trichobothriotaxy of type B; orthobothriotaxic (Vachon, 1974); femur with 9 trichobothria, patella with 14, and chela with 14. Legs with pedal spurs moderately developed. Tarsi with two rows of thin setae.

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**Table I** Morphometric values (in mm) of *Chaerilus celebensis*, female from Malino and *Chaerilus spinatus* sp. n., female holotype.

	<i>C. celebensis</i>	<i>C. spinatus</i> sp. n.
Total length*	30.3	18.7
Carapace:		
—length	4.2	3.0
—anterior width	2.3	1.7
—posterior width	4.3	3.2
Metasomal segment I:		
—length	1.5	1.0
—width	2.2	1.7
Metasomal segment II:		
—length	1.8	1.1
—width	1.8	1.5
Metasomal segment III:		
—length	1.9	1.2
—width	1.7	1.4
Metasomal segment IV:		
—length	2.0	1.4
—width	1.5	1.3
Metasomal segment V:		
—length	3.4	2.5
—width	1.5	1.3
—depth	1.3	1.1
Telson		
—length	4.5	3.7
—width	1.6	1.4
—depth	1.4	1.3
Pedipalp:		
—Femur length	3.8	2.6
—Femur width	1.6	1.2
—Patella length	4.1	2.8
—Patella width	1.9	1.3
—Chela length	7.8	5.6
—Chela width	2.6	2.1
—Chela depth	2.4	2.2
Movable finger:		
—length	3.8	3.0

\*Including telson.

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